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PATENT
226-133
1c979 U.S. PTO
09/783179
02/12/01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re US Patent Application of)
Robert Pulford, Jr.)
Filed: Simultaneously herewith.)
Titled: LINEAR STEPPER MOTOR AND)
FIXTURE FOR THE)
MAGNETIZATION OF THE SHAFT))
THEREOF AND METHODS) Date: February 12, 2001

INFORMATION DISCLOSURE STATEMENT

Assistant Commissioner for Patents
Washington DC 20231

Dear Sir:

Attached hereto are the following patent documents which are listed on attached
Form PTO/SB/08A:

United States Patent No. 3,867,676, issued February 18, 1975, to Chai et al., and
titled VARIABLE RELUCTANCE LINEAR STEPPER MOTOR, describes such a
motor that has toothed structures on the coils and on the linear member. The novelty of
the patent appears to reside in the arrangement of the coils and the manner in which they
are energized.

United States Patent No. 4,198,582, issued April 15, 1980, to Matthias et al., and
titled HIGH PERFORMANCE STEPPER MOTOR, describes, in part, a variable
reluctance linear stepper motor in which both the stator and the slider have nonmagnetic
materials arranged therein such that flux leakage is reduced.

United States Patent No. 4,286,180, issued August 25, 1981, to Langley, and
titled VARIABLE RELUCTANCE STEPPER MOTOR, describes, in part, such a motor
having helically toothed stator and slide structures, the respective widths of the teeth
having a predetermined relationship.

United States Patent No. 4,408,138, issued October 4, 1983, to Okamoto, and

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Inventor: Robert Pulford, Jr.

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titled LINEAR STEPPER MOTOR, describes a linear stepper motor having toothed structures on the stator and on the slider. Coil-wound salient poles are provided on the slider. The novelty of the patent appears to reside in the arrangement of rollers and rails disposed between the stator and the slider.

United States Patent No. 4,607,197, issued August 19, 1986, to Conrad, and titled LINEAR AND ROTARY ACTUATOR, describes a variable reluctance linear/rotary motor in which the armature has axial rows of teeth radially spaced around the surface thereof. Selective energization of stator windings provides linear, rotary, or both linear and rotary motion of the armature.

United States Patent No. 4,622,609, issued November 11, 1986, to Barton, and titled READ/WRITE HEAD POSITIONING APPARATUS, describes a variable reluctance positioning device having toothed structures on facing surfaces of the stator and the armature and with coils placed on the armature.

United States Patent No. 4,695,777, issued September 22, 1987, to Asano, and titled VR TYPE LINEAR STEPPER MOTOR, describes such a motor having toothed structures on the stator and on the slider, the toothed structures on the stator being on coil-wound salient poles. The toothed structures bear a predetermined relationship therebetween.

United States Patent No. 4,712,027, issued December 8, 1987, to Karidis, and titled RADIAL POLE LINEAR RELUCTANCE MOTOR, describes such a motor having a smooth double-helix stator shaft and a smooth laminated armature of alternate radial pole laminations and spacer laminations. This arrangement permits a balanced flux path and uses the stator and armature surfaces as slider bearing surfaces.

United States Patent No. 4,810,914, issued March 7, 1989, to Karidis et al., and titled LINEAR ACTUATOR WITH MULTIPLE CLOSED LOOP FLUX PATHS ESSENTIALLY ORTHOGONAL TO ITS AXIS, describes a variable reluctance actuator similar in pertinent respects to that described in the '027 patent above.

United States Patent No. 6,016,021, issued January 18, 2000, to Hinds, and titled LINEAR STEPPER MOTOR, describes a variable reluctance stepper motor similar in pertinent respects to the motor described in the '609 patent above. The novelty of the

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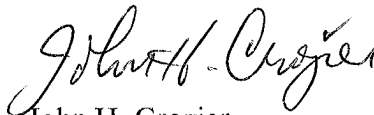
Inventor: Robert Pulford, Jr.

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patent appears to reside in the method of forming the teeth

Date: February 12, 2001.

Respectfully submitted,



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